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**WHAT IS CLAIMED IS:**

1. A particulate dispensing apparatus for dispensing particulate refractory material into a lining gap defined between an inner furnace surface  
5 and an expendable metal form, said particulate dispensing apparatus comprising:

a platform supporting a carriage adjacent an upper end of said expendable metal form, said carriage being pivotally coupled to said platform and rotatable about a pivot point located generally at the center of said  
10 platform;

a hopper coupled to said carriage, said hopper for receiving particulate refractory material via an inlet and dispensing said particulate refractory material through an outlet;

a feeder coupled to the outlet of said hopper, said feeder for  
15 moving the particulate refractory material from said outlet to a dispenser, said dispenser being coupled to said carriage at a distal end of said feeder and being suspended above said lining gap to deliver particulate refractory material into said lining gap;

an air extractor device coupled to said carriage for removing air  
20 from particulate refractory material deposited in said lining gap and for re-compacting the particulate refractory material; and

driving means for rotating said carriage relative to said platform.

2. A particulate dispensing apparatus as claimed in claim 1,  
25 wherein said feeder comprises a trough coupled to the outlet of said hopper for receiving said particulate refractory material and an auger coupled to said carriage and extending through said trough, said auger rotating about an auger axis to move particulate refractory material from the outlet of said hopper to said dispenser.

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3. A particulate dispensing apparatus as claimed in claim 2, wherein said auger includes a continuous blade, the pitch of said blade increasing in a direction towards said dispenser.
- 5 4. A particulate dispensing apparatus as claimed in claim 1, wherein said air extractor device comprises a pair of reciprocating forks.
5. A particulate dispensing apparatus as claimed in claim 1, wherein said dispenser comprises a telescoping shaft for receiving particulate refractory material from said feeder and delivering the particulate refractory material to said lining gap.
- 10 6. A particulate dispensing apparatus as claimed in claim 5, further comprising a sensor coupled to said dispenser for detecting the level of the particulate refractory material located in said lining gap and a controller for adjusting the length of said telescoping shaft to maintain said dispenser above the particulate refractory material located in said lining gap.
- 15 7. A particulate dispensing apparatus as claimed in claim 6, wherein said feeder comprises a trough coupled to the outlet of said hopper for receiving said particulate refractory material and an auger coupled to said carriage and extending through said trough, said auger rotating about an auger axis to move particulate refractory material from the outlet of said hopper to said dispenser.
- 20 8. A particulate dispensing apparatus as claimed in claim 7, wherein said auger includes a continuous blade, the pitch of said blade increasing in a direction towards said dispenser.
- 25 9. A particulate dispensing apparatus as claimed in claim 8, wherein said air extractor device comprises a pair of reciprocating forks.
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10. A particulate dispensing apparatus as claimed in claim 1, further comprising an accumulator coupled between said feeder outlet and said dispenser, said accumulator for delaying the progress of particulate refractory material from said feeder to said dispenser.
- 5 11. A particulate dispensing apparatus as claimed in claim 1, wherein said hopper and feeder are configured to provide smooth and consistent flow of particulate refractory material to said dispenser.
- 10 12. A particulate dispensing apparatus as claimed in claim 11 wherein said hopper includes generally steep inclined walls to provide smooth flow of particulate refractory material to the outlet thereof.
- 15 13. A particulate dispensing apparatus as claimed in claim 12, wherein said feeder comprises a trough coupled to the outlet of said hopper for receiving said particulate refractory material and an auger coupled to said carriage and extending through said trough, said auger rotating about an auger axis to move particulate refractory material from the outlet of said hopper to said dispenser.
- 20 14. A particulate dispensing apparatus as claimed in claim 13, wherein said auger includes a continuous blade, the pitch of said blade increasing in a direction towards said dispenser.
- 25 15. A particulate dispensing apparatus as claimed in claim 14 further comprising an accumulator disposed between said feeder and said dispenser for stalling delivery of particulate refractory material to said dispenser.
- 30 16. A particulate dispensing apparatus as claimed in claim 1 further comprising a viewing window adjacent said feeder.

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17. A particulate dispensing apparatus for dispensing particulate refractory material into a lining gap between an inner furnace wall and an expendable metal form, said particulate dispensing apparatus comprising:

5 a platform supporting a carriage adjacent an upper end of said expendable metal form, said carriage being pivotally coupled to said platform and rotatable about a pivot point located generally at the centre of said platform;

driving means for rotating said carriage relative to said platform;

10 a hopper coupled to said carriage, said hopper for receiving particulate refractory material via an inlet and dispensing said particulate refractory material through an outlet; and

a feeder coupled to the outlet of said hopper, said feeder having an auger extending through the length thereof having an encircling blade for moving the particulate refractory material from said outlet to a dispenser, said  
15 dispenser being coupled to said carriage at a distal end of said feeder and being suspended above said lining gap to deliver particulate refractory material into said lining gap;

wherein said auger blade has a variable pitch that increases in a direction toward said dispenser.

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18. A particulate dispensing apparatus as claimed in claim 17, wherein said dispenser comprises a telescoping shaft for receiving particulate refractory material from said feeder and delivering the particulate refractory material to said lining gap.

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19. A particulate dispensing apparatus as claimed in claim 18, further comprising a sensor coupled to said dispenser for detecting the level of the particulate refractory material located in said lining gap and a controller for adjusting the length of said telescoping shaft to maintain said dispenser  
30 above the particulate refractory material located in said lining gap.

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20. A particulate dispensing apparatus as claimed in claim 17, wherein said hopper and feeder are configured to provide smooth and consistent flow of particulate refractory material to said dispenser.
- 5 21. A particulate dispensing apparatus as claimed in claim 20 wherein said hopper includes generally steep inclined walls to provide smooth flow of particulate refractory material to the outlet thereof.
- 10 22. A particulate dispensing apparatus as claimed in claim 21 further comprising an accumulator disposed between said feeder and said dispenser for stalling delivery of particulate refractory material to said dispenser.
- 15 23. A particulate dispensing apparatus for dispensing particulate refractory material into a gap between a furnace wall and a form comprising:  
a frame assembly disposed above said form and including a carriage moveable along a circular path above said gap;  
a particulate refractory material feed assembly on said frame assembly for delivering particulate refractory material in a smooth and consistent manner to a dispenser on said carriage, said dispenser being  
20 suspended above said gap and delivering particulate refractory material into said gap in a manner to reduce the occurrence of airborne particulate material; and  
a drive for moving said carriage.
- 25 24. A particulate dispensing apparatus as claimed in claim 23 wherein said dispenser is extendable into said gap to reduce the distance the particulate refractory material falls.
- 30 25. A particulate dispensing apparatus as claimed in claim 24 wherein said feed assembly includes a hopper and a feeder, said hopper and feeder being configured to provide smooth and consistent flow of particulate refractory material to said dispenser.

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26. A particulate dispensing apparatus as claimed in claim 25 wherein said hopper includes generally steep inclined walls to provide smooth flow of particulate refractory material to the outlet thereof.

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27. A particulate dispensing apparatus as claimed in claim 26, wherein said feeder comprises a trough coupled to the outlet of said hopper for receiving said particulate refractory material and an auger coupled to said carriage and extending through said trough, said auger rotating about an  
10 auger axis to move particulate refractory material from the outlet of said hopper to said dispenser.

28. A particulate dispensing apparatus as claimed in claim 27, wherein said auger includes a continuous blade, the pitch of said blade  
15 increasing in a direction towards said dispenser.

29. A particulate dispensing apparatus as claimed in claim 28 further comprising an accumulator disposed between said feeder and said dispenser for stalling delivery of particulate refractory material to said dispenser.

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30. A particulate dispensing apparatus as claimed in claim 24 further comprising an air extractor device on said carriage to extract air from the particulate refractory material delivered to said gap.